

# *The Fortnightly* **REVIEW** *of*

THE CHICAGO DENTAL SOCIETY

*December 15, 1950*

*Volume 20 • Number 12*

## **Midwinter Meeting Promises Peak Performance**

**Country Wide Search for Talent Pays Off**

**B**y now nearly everyone knows that the 1951 Midwinter Meeting will be held at the Stevens Hotel beginning Monday, February 5, and continuing on through Thursday, February 8, and that it has taken the combined efforts of innumerable persons to put together a program worthy of Midwinter Meeting tradition. What they don't know is that there will be a lot of new talent, mixed judiciously with the old, to make a program of outstanding merit. The manufacturers will cooperate by putting on display all that's new in equipment and products. It, therefore, behooves anyone who is interested in getting a hotel room to apply at once and not risk disappointment.

### **LIMITED ATTENDANCE CLINICS**

Because so many of our out-of-town visitors have often been late with their requests for Clinics of their choice, a quick run down of the participants who have signed up is in order. In the Oral Surgery Section, several Chicagoans are listed: Robert A. Atterbury, O. H. Stuteville, and Wayne R. Dunnorn. From downstate will come Edward Thompson of Urbana. Bruce B. Cook of Detroit and L. W. Peterson of St. Louis round out this sterling group of oral surgeons.

In the field of Operative Dentistry, Miles Markley of Denver, the magician

with amalgam, heads the list. Others are: Drexel A. Boyd of Indianapolis; LaMar W. Harris, Irwin G. Neer and Eugene Bodmer of Chicago.

The Periodontia Section will be replete with attractive clinics: Bernard D. Friedman, a perennial favorite; Walter Nock and his group of diagnosticians, and Edward L. Ball, the fireball from Cincinnati.

For those who are looking for some real help in establishing and conducting a practice, the Practice Management Section presents: Gaylord C. James of Cleveland; Lloyd H. Dodd of Decatur, who is always in great demand; and Joseph B. Bucholtz of Milwaukee.

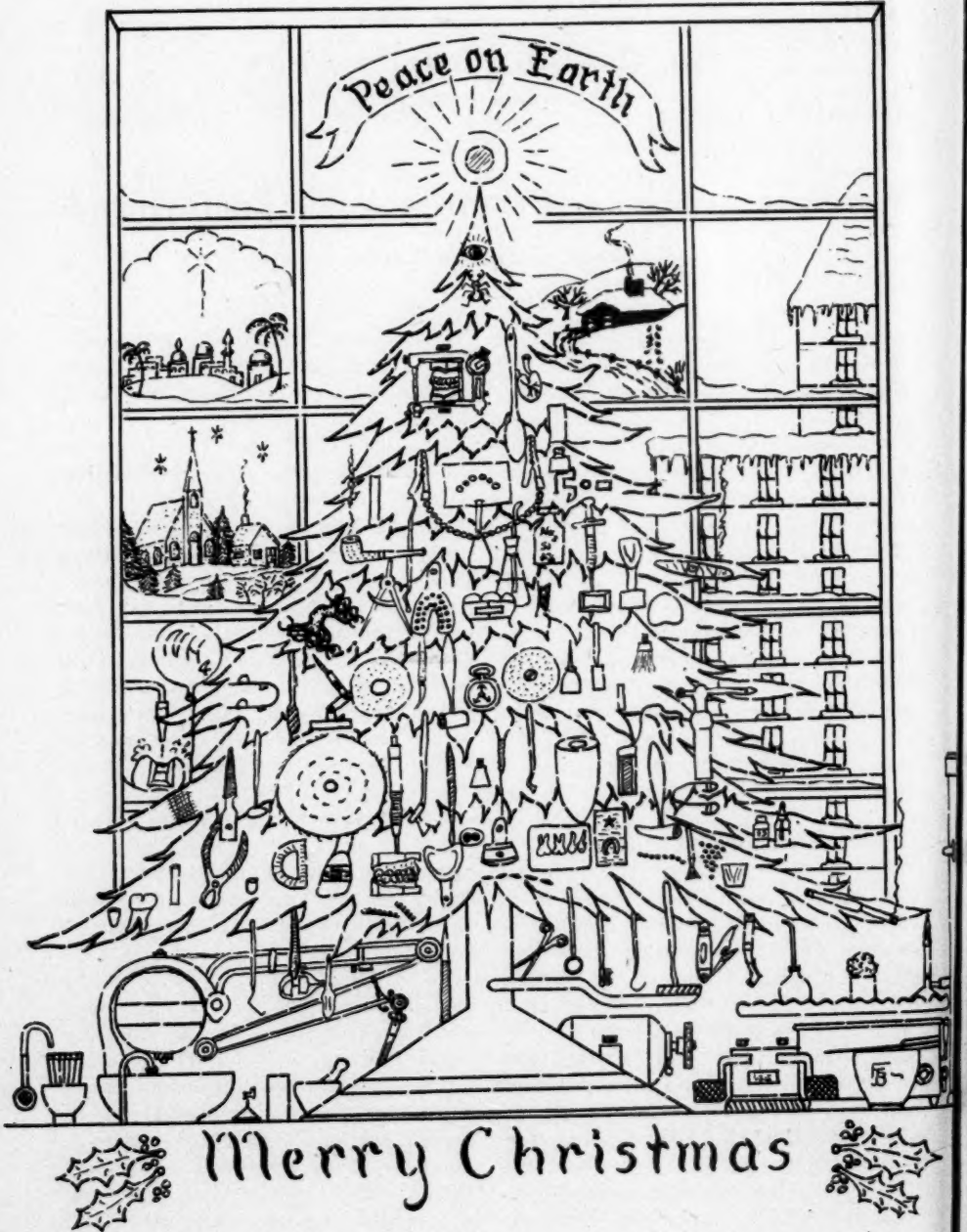
### **PARTIAL AND FULL DENTURES**

The Partial and Full Denture Section offers clinics in every phase of the subject. Such headliners as C. S. Kile, of Hutchinson, Kansas; Theodore A. Bodine of Akron; John W. Geller of Indianapolis; Cecil H. Bliss of Sioux City, Iowa; Earl Pound of Los Angeles, and Emmett Beckley of St. Joseph, Mo., make up the out-of-town contingent. From Stockholm, Sweden, comes Henry L. Beyron, personal dentist to the King of Sweden and a denture man of no mean ability. The Chicago cast consists of such well-known clinicians as: Ralph

*(Continued on page 35)*

# What Now?

By Frederick T. Barich



Merry Christmas

# NEWS AND ANNOUNCEMENTS

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## NOVEMBER MEETING ATTENDANCE UP

Apparently a considerably greater number of Chicago Dental Society members are interested in the concrete rather than in the abstract, for more than 300 of them, anxious to brush up on their immediate denture technique, turned out for the November Monthly Meeting, whereas a mere handful attended the October meeting which featured the New Zealand Dental Nurse Plan.

Dr. Carl W. Gieler of Northwestern, making his first appearance on a C.D.S. program, proved that he knew his subject, "Immediate Denture Prosthesis," from A to Z. This he demonstrated very graphically in his table clinic, but a bit less so in his lecture, where he seemed to have a little difficulty in putting his ideas across. Dr. Gieler was ably supported by a corps of teachers from the three Chicago schools: Drs. David P. Redmond, S. S. Flores, M. J. Robinson, Robert S. Strenk, and Kenneth P. Austin. Anyone who could get close enough to see, saw some superlative artistry by these clinicians.

## CALL TO ACTIVE DUTY

Virtually all of the 1,952 dentists who have been classified by their local Selective Service boards as 1-A or 1-A-O can expect to be called to active duty with the Armed Forces before July 1, according to defense officials. (There are 75 dentists in this category in Illinois.) These 1-A's represent about 40 per cent of the total of 4,959 dentists who registered on October 16. Physical examinations are in progress and at the time of these pre-induction examinations, each dentist is given an opportunity to volunteer for a commission and thus qualify for the \$100.00 bonus. Those who are inducted will be ineligible for the bonus.

## NATIONAL CHILDREN'S HEALTH DAY

By action of the House of Delegates, the first Monday in February will again be observed as Children's Dental Health Day in 1951.

That this day is not universally acceptable is apparent, for the House directed the Council on Dental Health to "study this matter further in the hopes that means can be developed whereby the constituent societies who find this date unsuitable may participate in a program of a similar type with adequate support from the American Dental Association."

## FLUORIDATION RECOMMENDED

In accord with the action of the House of Delegates of the American Dental Association, proposals for fluoridation of public water supplies as a means of reducing the dental caries rate among children took on new impetus. In Chicago, at the behest of the Chicago Dental Society, Mayor Kennelly instructed his public works commissioner to investigate the possibility of adding fluorides to the city's water supply. Commissioner Hewitt is presently computing costs of adding sodium fluosilicate, which has proven to be the least expensive of the fluorides, to the water supply and is expected to have his report ready in the very near future.

## DR. LEO KREMER NEW CHAIRMAN

Dr. Leo Kremer, past-president of the Chicago Dental Society and formerly vice-president of the American Dental Association, has been named chairman of the Council on Relief. He reports that the 1950-51 campaign is off to an excellent start and urges all members of the

profession to increase the size of their contributions to meet the increasing number of appeals from needy dentists for assistance. Goal for the current campaign is \$100,000.00. Send contributions to the American Dental Association Relief Fund, 222 East Superior Street, Chicago 11, Illinois.

## **STUDENTS AVAILABLE FOR HELP**

Full-time and part-time help is available through the Placement Office at Wright Junior College, located at 3400 N. Austin Avenue. Classes in the three branches of Chicago City Junior College, which are located in the northwest, west and south sides of Chicago, are in session from 8:00 a.m. to 10:00 p.m. Students' individual programs are assigned at various times between these hours. This means that students are available for part-time work at different times of the day.

Full-time help is available from various sources. In January and June, members of the graduating classes who do not plan to continue their formal education are placed in full-time positions by the Placement Office. An effort is made to send these graduates on employment interviews a month preceding graduation. During the school year, the services of the Placement Office are available to the evening school students, the alumni, and to those students who for various reasons have to drop from school.

Chicago City Junior College offers the first two years of college work. The courses are so organized that students may complete their formal education at the end of these two years, or, they may transfer to another college or university for a degree. All students enrolled take Biological and Physical Science General courses.

Wright Junior College, the northwest side branch, has enrolled this semester 4,734 students in credit classes, both day and evening. In addition, 1,580 students are enrolled in the evening classes of the

Adult Education Program. The total enrollment is 6,314.

For assistance in securing help, doctors from various parts of the city may contact Mr. James F. Groark, Director of Placement at Wright Junior College. Office help, receptionists and laboratory assistants are available. Requests from districts outside the range of Wright students will be turned over to either of the other two branches of Chicago City Junior College for service. Mr. Groark's telephone number is PENSacola 6-6746.

## **CHICAGO DENTAL ASSISTANTS ASSOCIATION**

The regular monthly meeting of the C.D.A.A., scheduled for Thursday, December 21, will be postponed and instead the annual Christmas Party will be held on that evening at the Chiseler's Club, 55 E. Washington St., at 8 p.m. A very interesting evening is planned for all dental assistants and their guests. Santa Claus will be present to present each one with a gift from the grab bag.

In January, the Association will celebrate its 27th birthday in the form of a dinner party preceding the regular monthly meeting. It is to be held on Thursday, January 18, at 7 p.m. at Diana Court, 540 N. Michigan Avenue. All assistants interested in attending this dinner should make reservations before January 1 by calling Miss Darlene Shak at JUniper 8-2954.

A résumé of the "History of the Chicago Dental Assistants Association" will be given by Emma Luke, Betty Drennen and Ida Williamson, all prominent members of the Association.

We are hoping to have the three counselors, Drs. Joseph Zielinski, Robert G. Kesel, and Harold Hillenbrand, and their wives, present as guests at the dinner.

## **LAME DUCK SESSION**

The A.M.A.'s Washington Bureau reports that there will be no medical or health legislation scheduled for the "lame

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# Thermal Changes Developed During the Cutting of Tooth Tissue\*

F. A. Peyton, D.Sc. and R. C. Vaughn, A.B.

[Editor's Note: *Floyd A. Peyton, D.Sc., is Professor of Dentistry, in charge of Dental Materials, University of Michigan. After obtaining both a Bachelor's and a Master's degree in chemistry, his Doctor of Science degree was obtained from the University of Michigan in 1933 in the field of restorative dental materials. In addition to teaching this subject at the University of Michigan since graduation, three years were spent at the University of Texas School of Dentistry teaching the same subject and approximately three years were spent in industrial research on restorative materials. Contributions to literature include periodical reports on gold alloys, cements, and dental resins. Together with Dr. Stanley D. Tylman, the book on acrylics in dentistry was prepared in 1946.*]

During the past fifteen years several studies of the temperatures developed while preparing cavities in tooth



Dr. Peyton

structure have been reported. While some agreement exists from the various studies that a temperature rise occurs during the operation of the rotating dental instrument for cavity preparation, there is in general only a qualitative correlation that has been established between the numerous variable factors involved. This lack of correlation has led to generalized

statements of the cause and extent of temperature change, as well as methods to avoid or control the heat generation. In some instances, only a general survey of the problem, and the probable significance, is described from a limited number of physical measurements. From other studies, physical measurements are reported with some of the variable factors under control, but with little emphasis placed in the significance of the results.

Among the first reports is that by Jeserich,<sup>1</sup> which lists not only the factors necessary to minimize thermal changes in tooth structure during operative procedures, but also reports some characteristic thermal changes to be expected with variations in practice and instruments used. In general, the temperature changes reported by Jeserich are moderate, with emphasis placed on the need to observe cautious methods of operation. The work is most valuable for the recognition that is given to the variables which influence thermal changes, such as: (1) Size, sharpness and speed of operation of tool, (2) pressure of operation and direction of pressure, (3) application of sustained or intermittent pressure, and (4) dryness of field of operation.

Previous to the report of Jeserich, a ten degree centigrade rise in the pulp chamber had been noted by Brouner, "when grinding on the enamel for forty-five seconds at moderate pressure, at the end of which time the dentin was not yet exposed."<sup>2</sup> Later reports describe the possible effects of heat, caused by rapid operative technics when anesthesia is employed,<sup>3</sup> with emphasis on the physiological response of the tissue to thermal changes. Typical of the physical measurements of temperature changes during the cutting of tooth structure is the work described by Willis and Worner,<sup>4</sup> and by

\*This study was supported by a grant from the Horace H. Rackham School of Graduate Studies, University of Michigan.

Presented at the Midwinter Meeting of the Chicago Dental Society, February, 1950.

Walsh and Symmons.<sup>5</sup> In each instance values are given which show comparisons between different cutting instruments but a comparison of the influence of the many other variables is not demonstrated. Results are presented for arbitrarily controlled conditions which are described as being most practical. The reports of Henchel<sup>6,7</sup> describe measurements of thermal changes in the immediate vicinity of the cutting instrument. The method employed was one of allowing water of a known temperature as a heat absorbent to pass at a fixed rate over the area of operation. The experiments were carried on under conditions of normal careful operative practice with fixed values for numerous variables. From the rise in temperature of the water, the temperature of the area in contact with the cutting instrument was calculated. The calculated values were higher than those reported by measurements made by placing a thermocouple in the area of the operation. This is as would be expected because of the insulating characteristics of tooth structure. The influence of such factors as operating time,<sup>8</sup> the use of water,<sup>9,10</sup> air,<sup>11</sup> or chilled burs<sup>12</sup> as cooling agents have been described. Other authors<sup>13,14,15</sup> have described the influence of still other variables.

Most authors recognize that some correlation exists between thermal changes during operation and the pain observed by the patient. In some instances, the trauma developed in the underlying dentin and pulp tissue, as well as the influence of thermal changes on histopathological reactions, likewise have been noted. It appears that this phase of the problem has been most inadequately studied.

#### PRELIMINARY REPORT

This study was undertaken in an effort to establish relationships between some of the numerous variable factors and the thermal changes which occur during the cutting operation on tooth structure. At this time some results will be given on thermal changes to be ex-

pected (1) from different operating speeds; (2) from certain various sizes and types of steel burs; (3) from operating pressure variations; (4) from intermittent or sustained application of pressure; (5) from cutting entirely in enamel or dentin, or both simultaneously; (6) from different operating time intervals with intermittent pressure application; (7) at various distances from operating instrument to thermocouple; (8) from a comparison of diamond points and steel burs; (9) from the use of a gas propelled abrasive to remove tooth structure. Since the study of some of these variables is not yet complete, and the effect of other factors is still in progress, this report should be considered as preliminary in nature.

The experimental method adopted in this study was arrived at after due consideration was given to the methods previously reported. The results described at this time were all obtained from measurements made on extracted adult molar and bicuspid teeth, into which chromel-alumel thermocouples of 28 gage wire were forced through an opening produced in the enamel by a #1 round steel bur. Wedging of the thermocouple into the small opening maintained close proximity between the thermocouple and tooth structure. The thermal changes were recorded by a Leeds-Northrup Speedomax automatic recorder, capable of recording temperatures from six thermocouples at the rate of one recording each four seconds. For support, the teeth were embedded in plaster with the crown portion exposed. The plaster was contained in a holder suitable for mounting in the mercury column pressure meter developed, and described previously,<sup>16</sup> for measuring the pressure employed for condensing amalgam. With this instrument, it is considered that the pressures applied are accurate to within less than plus or minus one-quarter of a pound. Where the rotating instrument was used, it was operated in the conventional straight handpiece by a standard motor at speeds of 1440, 2350, 3400, and 4000 r.p.m., as measured by a hand tachometer. The teeth were maintained in tap water

after extraction and immediately immersed in water after being mounted in plaster, so as to be in a moist condition until the time that the cutting operation was started. It has been observed<sup>17</sup> that the Knoop indentation hardness of tooth enamel does not change in an indefinite period after extraction, when kept in a moist condition. It was observed further that the hardness does not change within a period of 2 hours of drying in air while tests are being run. All results described at this time were obtained from operating in a "dry field," in air at room temperature, without the aid of coolants other than an occasional single short blast of air to remove chips from the area of operation.

Three thermocouples were set in each tooth and subsequently uncovered during the operation except in tests described otherwise. An effort was made to place the thermocouples as near as possible to the dento-enamel junction by insertion through the enamel from the tooth surface at a point near the largest circumference of the tooth. This differs from the usual arrangement of recording the temperature changes in the cavity with thermocouples that are placed in the pulp chamber and separated from the surface of operation by variable thicknesses of dentin or enamel. In the method used for this study, the cavity of operation was enlarged in such a manner that the cutting instrument just avoided touching the thermocouples, thus recording the temperatures as closely as is thought possible to the cutting surface and avoiding the insulating effect of an appreciable amount of intervening tooth structure. Studies are being made, but are not reported at this time, in which the thermocouple is placed in the pulp chamber. In order to minimize the effect of dull burs, and variation between products of steel burs, results from only new Ransom and Randolph "Cutwell" steel burs are reported at this time, in which one bur was used to uncover each thermocouple when cutting enamel and one bur to uncover the three thermocouples when operating in dentin.

It is recognized that the method adopted permits slight variations in pressure control, distance from cutting instrument to thermocouple, and amount of tissue removed when using intermittent cutting. There is also the factor of tooth variability due to patient age, comparisons of different teeth, storage conditions after extraction, and others, which would be eliminated if tests were made on some synthetic substance of controlled composition and properties. In justification of the method, however, the results obtained do not seem to be sufficiently variable to warrant strict mechanical control in order to eliminate the variable human factor. It is considered to be undesirable to divorce the results from clinical application. It should be pointed out at this time that the method of uncovering the thermocouple during the cutting operation has resulted in very little time lag between the application of the instrument and the recording of the maximum temperature. This is thought to result mainly from the fact that there is a minimum of tooth substance remaining to insulate the thermocouple. At distances of one to three millimeters from the thermocouple there was a slight temperature lag, as has been noted by other investigators. This will be discussed in greater detail later in this report.

The practice followed for intermittent cutting was to apply the desired pressure for a period of 2-3 seconds, then remove the cutting instrument from the area for approximately one second, after which the cycle was repeated for the desired interval of operation, or until the thermocouple was uncovered. When a sustained pressure was applied, the cutting instrument was directed in such a manner as to operate to the immediate vicinity of the thermocouple and uncover it at the end of the desired interval.

#### DATA

In the initial stages of this study, it was considered desirable to distinguish between the thermal changes developed while cutting only in enamel or in dentin,

since it has been recognized for a long time that the two substances vary considerably in physical characteristics. Accordingly, as shown by data in Tables I and II, and Figs. 1 and 2, results have been obtained when using two typical sizes of round and inverted cone steel burs, operated at two practical speeds in both enamel and dentin. These data represent a difference in operating pressure applied, of  $1\frac{1}{2}$  lbs. when cutting dentin, and  $2\frac{1}{2}$  lbs. for enamel. It was found early in the study that light pressures of  $1\frac{1}{2}$  lbs. or less were inefficient in removing enamel, and that pressures of more than  $1\frac{1}{2}$  lbs. removed the dentin so rapidly as to be impractical. Further studies are being undertaken to correlate pressures applied with the efficiency of operation in amount of tissue removed. With instruments that cut enamel and dentin simultaneously, it may be common practice to employ pressures up to  $2\frac{1}{2}$  lbs. or more.

In Fig. 1 and Table I is shown the average thermal change to be anticipated within 0.5 mm. of the region of operation. These values represent an average of at least nine typical readings obtained from different teeth for each condition described. These results show the effect of speed variation, bur size and design, on the thermal changes occurring when cutting both enamel and dentin with pressure applications as indicated. In general, it is observed that increased temperatures prevail with the use of larger bur sizes and faster speeds, when operated in both enamel and dentin. An exception is the #4 round bur which produced less temperature rise when operated in enamel at high speed. Whether this is a true condition or an experimental error will be determined. No such trend is observed when using the #4 bur in dentin. The use of inverted cone burs #35 and #37 show generally more thermal change in both enamel and dentin than round burs when operated at the same speed and pressure.

When using the same cutting instruments operated at the same speeds in dentin as in enamel, under practical pressures of one pound less for dentin than

enamel, it is observed that the thermal change in dentin is roughly one-third as great as in enamel. From observations on the influence of pressure variations which will be discussed later in this report, and from some tests from an incomplete series of studies using  $2\frac{1}{2}$  lbs. to cut dentin, it is not believed that the difference observed in Fig. 1 between thermal changes in enamel and dentin is due to the difference in pressure alone.

In Fig. 2 and Table II is given the average of all maximum readings obtained on different thermocouples when operating on enamel and dentin under the same conditions as maintained in tests described in Table I, Fig. 1, except that values are also given for the #557 bur when cutting enamel. It is observed that these maximum values are in general slightly higher than the average operating values reported, but follow the same general trends as observed in Fig. 1. It is believed that these values represent typical maximum values to be expected while those in Fig. 1 are typical of average prevailing temperatures at a distance slightly removed from the area of operation.

For general comparisons, certain values obtained with the same conditions of operation in dentin as described in Table II, except that  $2\frac{1}{2}$  lbs. pressure was applied, are given in Table III. While these values may not be conclusive, they indicate that an increase of from 5 to  $10^{\circ}$  F. may be expected by increasing the operating pressure from  $1\frac{1}{2}$  to  $2\frac{1}{2}$  pounds when cutting dentin with two different burs. This is an indication that the temperature rise when cutting enamel is substantially above that developed from cutting dentin under comparable conditions of operation.

#### VARIATION IN PRESSURE

Since it was apparent from the results presented that a variation in pressure during operation may cause a difference in thermal change, some tests were conducted to determine the influence of varying the pressure from 0.5 to 2.5 pounds

when operating at a constant speed. To date, results are available for only one size of steel bur when cutting simultaneously in both enamel and dentin with intermittent operation. The results are given in Table IV and Fig. 3.

It will be observed that the increase in temperature developed is more than doubled as the pressure is increased from 0.5 pounds to 2.5 pounds, with the speed constant at 2350 r.p.m., when using the #37 inverted cone bur. The maximum temperature attained, however, within 0.5 mm. of cutting surface is not as high as in Tables I and II where the operation was limited to enamel alone, but is a little higher than when cutting only dentin. This is as might be expected, and probably represents closely the temperature to be expected in practical conditions where some enamel and dentin are cut simultaneously.

The result of one series of tests in which the speed was increased to 4000 r.p.m., but the operating pressure kept at 0.5 pound, shows that with approximately a 70% increase in speed there is a 61% increase in temperature developed. In other words, there is a comparable thermal change produced with the #37 bur, either by increasing the pressure from 0.5 to 1.5 pounds with the speed at 2350 r.p.m., or by maintaining the pressure at 0.5 lb. and increasing the speed from 2350 to 4000 r.p.m. Additional studies are being made to determine if similar relationships exist for other burs and pressures. For the results available for the #37 bur, a linear relationship has been plotted in Fig. 3, although this same relationship may not exist at higher or lower pressures.

#### **INFLUENCE OF OPERATING SPEED**

It will be observed from results in Table V, and Fig. 4, that an increase in operating speed is significant in increasing the thermal change produced when cutting both enamel and dentin with the application of a relatively heavy (2-2.5 pounds) but intermittent pressure. For

this series of tests both the #557 and #558 fissure steel burs were studied. From these data it is seen that the larger bur (#558) produces a slightly greater thermal change than the smaller bur for all speeds studied. This is not unlike the condition observed in Figs. 1 and 2 for different bur sizes at two different speeds. It is observed also that by increasing the speed of both burs from 1440 to 3400 r.p.m. that the temperature increase is practically doubled.

When operating the #557 bur at 4000 r.p.m. with 2-2.5 lbs. pressure, it was observed that the bur blued and dulled rapidly so that it could not be used for the 2.5 minute cutting interval as was the #558 under the same conditions. Before the end of the 2.5 minute interval sufficient dulling had occurred as to make the cutting ineffective, giving rise to abnormal thermal changes with the development of a blue color in the steel bur. This is the only instance in which this condition of bluing the bur was observed. Although reported by other investigators as being observed often, the change in color of the bur was not typical in this study except when a small bur was used, for a prolonged cutting time with heavy pressure, and at high rates of speed. Additional studies are planned to determine the influence of operating speed on thermal change when using other bur designs and various operating pressures.

#### **INFLUENCE OF CUTTING TIME AND DISTANCE FROM OPERATING SURFACE**

The results presented in Table VI show the thermal change resulting from intermittent cutting for 30, 60 and 120 second intervals with a #557 steel bur in enamel and dentin at various distances from the thermocouple. The same results for the 30 and 120 second intervals are plotted in Fig. 5. The force on the bur was maintained at 2.5 pounds and the operating speed 3400 r.p.m. The six thermocouples were inserted through the tooth surface as in previous measurements. Vertical cuts were made in the

enamel and dentin to permit the bur to come into close proximity to one of the thermocouples. Distances from the operating surface to the other thermocouples were determined by use of dividers and millimeter scale. This gave different distances from the operating area to the different thermocouples placed at different locations in the tooth, which permitted simultaneous temperature readings at different distances from the point of cutting. The distance from the cutting area to the different thermocouples was readily observed to be as much as 5 or 6 mm. in some instances.

The results plotted in Fig. 5 represent individual temperature measurements on the several thermocouples after different time intervals of operation. Approximately ten teeth were studied in this fashion for each cutting time interval. Curves have been drawn to represent typical temperatures to be expected at different distances from the surface being cut. These values have been used to produce Table VI. While not numerical averages, these values are considered to be representative of thermal changes to be expected.

From these results it is apparent that essentially the same values are obtained at different distances when operating for any one of the three time intervals. It would seem, therefore, that the total thermal changes will be detected near the thermocouple in a period of 30 seconds or less as readily as when operating for 120 seconds. In this connection, it was observed that some time lag occurred in recording maximum temperatures, or temperature changes, in different thermocouples depending on the distance from the operating area. In no instance was the time lag more than 15 seconds and usually much less. It is observed from Fig. 5 that the distance from the area being cut is important in determining the temperatures developed. In close proximity to the cutting tool the temperature reaches a maximum. Additional studies are being made to determine the changes that occur in the region of less than 1 mm. from the bur as well

as to note the influence of using various types and sizes of cutting instruments.

#### EFFECT OF SUSTAINED CUTTING FORCE

In all previous tests herein reported, the results have represented an intermittent cutting operation in which force was applied to direct the cutting tool for a period of approximately two seconds, then followed by a rest interval of about one second. This action resulted in a cutting operation that might be described as pulsating in character and is thought to cause less thermal change than a sustained driving force applied to the instrument. This type of intermittent cutting is frequently recommended in dental practice.

The results presented in Table VII and Fig. 6 give the effect of a constant 1.5 pound and 2.5 pound load application on a #557 steel bur and #39 diamond point (Ransom and Randolph) for a 2.5 minute interval, with only enough movement to allow removal of tooth structure and prevent clogging of the cutting instrument. The same method of measuring the temperatures developed at different distances from the cutting surface was used as for tests in Fig. 5, except that only one thermocouple was used. The distance from the cutting surface to the thermocouple was measured after 2.5 minutes. The maximum distance was limited to about 2 to 3 mm. for these tests, since the use of only one thermocouple did not allow for as great a distance as when six thermocouples were placed in the same tooth. The frequency of recording values was reduced to 4 seconds by the use of one thermocouple, whereas each thermocouple recorded values at 24 second intervals when six were used. Two cutting speeds, of 1440 and 3400 r.p.m., were employed with the steel bur, but because of the rapid removal of tissue with the diamond point, it was impossible to get values for comparison with speeds greater than 1440 r.p.m. and a force greater than 1½ pounds.

The values plotted in Fig. 6 and shown in Table VII should be considered as representative values, rather than average numerical values, obtained for each of 2 to 10 measurements recorded at different distances from the thermocouple. It is thought that values obtained are sufficiently consistent to justify this method of charting the results.

It is seen from the results that the lower pressures gave consistently lower temperature readings for each condition of speed as well as for both burs and diamond points. It is seen also that the diamond point gave a slightly greater temperature rise than the steel bur when operated at the same speed (1440 r.p.m.) and pressure (1.5 pounds). Both were operated in a dry condition. The results indicate that with other factors kept constant considerably higher temperatures are developed when a sustained cutting force is applied (Fig. 6) than when an intermittent force is employed (Fig. 5).

Additional tests are being made in this series of studies to determine the influence of other sizes and types of cutting instruments. Studies also are being made in this series, as well as others described, to determine the effectiveness of various instruments in removing tissue and the relationship to thermal changes.

#### **TEMPERATURES DEVELOPED WITH CARBORUNDUM STONES**

As yet, no systematic study of the carborundum stones has been undertaken, although a limited number of values have been obtained from the use of these tools in connection with the removal of tooth tissue in advance of operations with the bur. The limited number of values reported at this time indicates a trend in thermal change to be expected when stones are used, and suggests the desirability of continuing the study under controlled conditions of speed and pressure, as well as wet or dry areas of operation and other known variables. From the results in Table VIII, obtained when the stone was operated in the dry condition

to remove enamel, it is suggested that the temperature rise to be expected from the use of stones may be slightly higher than that developed by steel burs.

#### **THERMAL CHANGES FROM AIRDENT UNIT**

During recent months an instrument known as the Airdent Unit has been perfected by the S. S. White Dental Mfg. Company. This instrument is designed on the principle, suggested by Black,<sup>18</sup> of removing tooth tissue by the impact of an abrasive agent, such as aluminum oxide, suspended in a gas stream of high velocity carbon dioxide. By contrast with the use of the conventional rotary cutting instruments, which create heat from friction and cutting action, Black has noted that by utilization of the airbrasive principle, "what heat is created is dissipated as fast as it is released."

Typical values of temperature change observed from the use of the Airdent Unit to remove tooth tissue are given in Table IX. The same general practice was followed in making these tests as in the others reported. One thermocouple was inserted from the tooth surface to a point near the dento-enamel junction and the cutting action was continued until the thermocouple was practically exposed.

It is observed from the values in Table IX that within the optimum range of operation the average of the changes in temperature are negligible from the use of this instrument in comparison to the rotary type of cutting tool. The Airdent Unit is equipped with an arbitrarily selected scale, ranging from 0 to 100, to indicate the "rate of flow," or concentration of abrasive powder in the gas stream. The optimum range of operation is established at 60 to 90 on the scale. At lower values it is obvious from the use of the instrument that insufficient abrasive powder is present to produce effective removal of the tooth tissue. From Table IX it is seen that within the recommended operating range the average temperature change is only 3.5° F, from -2.5° F to +1.0° F. Individual measure-

ments in this range varied from  $-5^{\circ}$  F to  $+4.5^{\circ}$  F. As the rate of flow is reduced below the recommended range, there is seen to be a slight cooling effect as might be expected when a high pressure gas is passing over the operating surface to give cooling by evaporation without the presence of sufficient abrasive to remove tooth structure. No tests have been made of the efficiency of this instrument in removing tooth tissue.

#### SUMMARY

It appears from the studies described in this report that certain relationships can be established between the temperature changes that occur during the cutting of tooth structure and the several variable factors that exist during the operation. Since the results herein described are preliminary in nature and the study is still actively in progress, no conclusions are presented at this time. Although typical results were lower in value, it has been demonstrated that a temperature rise of as much as  $140^{\circ}$  F may occur in the tooth structure within 0.5 mm. of the cutting instrument when using steel burs of average size, operated at 4000 r.p.m. with a force of 2.5 pounds applied on the cutting tool. Since it is shown that slow speeds, small bur sizes, and light pressure applications tend to produce less temperature rise, it is suggested that these conditions of operation be employed as far as is practicable. The results indicate that a sustained force on the cutting instrument will cause a somewhat greater temperature rise than an intermittent application of force. Values have been obtained which indicate that a greater temperature rise occurs when cutting enamel than dentin, that the thermal change observed is dependent upon the thickness of tooth structure between the surface being cut and the point of measurement, and the choice of cutting instrument employed. The study is being continued to establish better correlation between thermal changes which occur and the numerous variables observed, and to extend the correlation

to include the factor of efficiency of operation.

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TABLE 1.—AVERAGE TEMPERATURES DEVELOPED DURING  
THE CUTTING OF ENAMEL AND DENTIN

(Intermittent Operation)

| Bur Size              | Total Cutting Time<br>Minutes | Speed of Rotation<br>R.P.M. | Pounds Pressure<br>Applied | Temperature*<br>°F | Probable<br>Error |
|-----------------------|-------------------------------|-----------------------------|----------------------------|--------------------|-------------------|
| (Cutting Enamel Only) |                               |                             |                            |                    |                   |
| #2                    | 2.5                           | 2350                        | 2-2.5                      | 49.4               | ± 2.7             |
| #2                    | 2.5                           | 3400                        | 2-2.5                      | 62.9               | ± 6.0             |
| #4                    | 2.5                           | 2350                        | 2-2.5                      | 78.1               | ± 3.8             |
| #4                    | 2.5                           | 3400                        | 2-2.5                      | 69.9               | ± 10.7            |
| #35                   | 2.5                           | 2350                        | 2-2.5                      | 62.2               | ± 7.6             |
| #35                   | 2.5                           | 3400                        | 2-2.5                      | 73.0               | ± 7.9             |
| #37                   | 2.5                           | 2350                        | 2-2.5                      | 93.3               | ± 7.4             |
| #37                   | 2.5                           | 3400                        | 2-2.5                      | 100.2              | ± 5.9             |
| (Cutting Dentin Only) |                               |                             |                            |                    |                   |
| #2                    | 2.5                           | 2350                        | 1-1.5                      | 19.3               | ± 1.4             |
| #2                    | 2.5                           | 3400                        | 1-1.5                      | 22.2               | ± 1.3             |
| #4                    | 2.5                           | 2350                        | 1-1.5                      | 26.0               | ± 4.1             |
| #4                    | 2.5                           | 3400                        | 1-1.5                      | 31.3               | ± 1.2             |
| #35                   | 2.5                           | 2350                        | 1-1.5                      | 23.0               | ± 0.9             |
| #35                   | 2.5                           | 3400                        | 1-1.5                      | 31.7               | ± 2.2             |
| #37                   | 2.5                           | 2350                        | 1-1.5                      | 25.2               | ± 2.0             |
| #37                   | 2.5                           | 3400                        | 1-1.5                      | 38.3               | ± 1.9             |

\*Average of nine readings.

TABLE 2.—MAXIMUM TEMPERATURES DEVELOPED DURING  
THE CUTTING OF ENAMEL AND DENTIN

(Intermittent Operation)

| Bur Size              | Total Cutting Time<br>Minutes | Speed of Rotation<br>R.P.M. | Pounds Pressure<br>Applied | Temperature*<br>°F | Probable<br>Error |
|-----------------------|-------------------------------|-----------------------------|----------------------------|--------------------|-------------------|
| (Cutting Enamel Only) |                               |                             |                            |                    |                   |
| #2                    | 2.5                           | 2350                        | 2-2.5                      | 57.1               | ± 4.2             |
| #2                    | 2.5                           | 3400                        | 2-2.5                      | 88.8               | ± 4.3             |
| #4                    | 2.5                           | 2350                        | 2-2.5                      | 90.4               | ± 4.6             |
| #4                    | 2.5                           | 3400                        | 2-2.5                      | 89.5               | ± 12.8            |
| #35                   | 2.5                           | 2350                        | 2-2.5                      | 74.7               | ± 8.3             |
| #35                   | 2.5                           | 3400                        | 2-2.5                      | 88.0               | ± 8.5             |
| #37                   | 2.5                           | 2350                        | 2-2.5                      | 102.4              | ± 8.5             |
| #37                   | 2.5                           | 3400                        | 2-2.5                      | 113.5              | ± 6.9             |
| #557                  | 2.5                           | 2350                        | 2-2.5                      | 66.7               | ± 7.0             |
| #557                  | 2.5                           | 3400                        | 2-2.5                      | 90.4               | ± 10.8            |
| (Cutting Dentin Only) |                               |                             |                            |                    |                   |
| #2                    | 2.5                           | 2350                        | 1-1.5                      | 22.8               | ± 2.4             |
| #2                    | 2.5                           | 3400                        | 1-1.5                      | 26.5               | ± 2.5             |
| #4                    | 2.5                           | 2350                        | 1-1.5                      | 29.0               | ± 5.5             |
| #4                    | 2.5                           | 3400                        | 1-1.5                      | 34.1               | ± 1.2             |
| #35                   | 2.5                           | 2350                        | 1-1.5                      | 25.6               | ± 0.8             |
| #35                   | 2.5                           | 3400                        | 1-1.5                      | 37.2               | ± 2.9             |
| #37                   | 2.5                           | 2350                        | 1-1.5                      | 27.5               | ± 2.0             |
| #37                   | 2.5                           | 3400                        | 1-1.5                      | 41.3               | ± 2.9             |

\*Average of nine readings.

(Continued on following page)

TABLE 3.—TEMPERATURES DEVELOPED DURING THE CUTTING OF DENTIN

| Bur Size                            | Total Cutting Time<br>Minutes | Speed of Rotation<br>R.P.M. | Pounds Pressure<br>Applied | Temperature*<br>°F | Probable Error |
|-------------------------------------|-------------------------------|-----------------------------|----------------------------|--------------------|----------------|
| Average Thermal Change              |                               |                             |                            |                    |                |
| #2                                  | 2.5                           | 3400                        | 2.5                        | 24.9               | ± 1.2          |
| #35                                 | 2.5                           | 3400                        | 2.5                        | 36.0               | ± 3.6          |
| Maximum Thermal Change              |                               |                             |                            |                    |                |
| #2                                  | 2.5                           | 3400                        | 2.5                        | 37.7               | ± 2.8          |
| #35                                 | 2.5                           | 3400                        | 2.5                        | 49.9               | ± 6.4          |
| Average Thermal Change From Table 1 |                               |                             |                            |                    |                |
| #2                                  | 2.5                           | 3400                        | 1.5                        | 22.2               | ± 1.3          |
| #35                                 | 2.5                           | 3400                        | 1.5                        | 31.7               | ± 2.2          |
| Maximum Thermal Change From Table 2 |                               |                             |                            |                    |                |
| #2                                  | 2.5                           | 3400                        | 1.5                        | 26.5               | ± 2.5          |
| #35                                 | 2.5                           | 3400                        | 1.5                        | 37.2               | ± 2.9          |

\*Average of nine readings.

TABLE 4.—VARIATION IN TEMPERATURES DEVELOPED WITH CHANGE IN PRESSURE  
(Intermittent Operation)

| Bur Size               | Total Cutting Time<br>Minutes | Speed of Rotation<br>R.P.M. | Pounds Pressure<br>Applied | Temperature*<br>°F | Probable Error |
|------------------------|-------------------------------|-----------------------------|----------------------------|--------------------|----------------|
| (In Enamel and Dentin) |                               |                             |                            |                    |                |
| #37                    | 2.5                           | 2350                        | 0.5                        | 28.8               | ± 2.6          |
| #37                    | 2.5                           | 2350                        | 1.0                        | 36.3               | ± 7.7          |
| #37                    | 2.5                           | 2350                        | 1.5                        | 51.2               | ± 9.0          |
| #37                    | 2.5                           | 2350                        | 2.5                        | 67.2               | ± 3.4          |
| #37                    | 2.5                           | 4000                        | 0.5                        | 46.5               | ± 3.4          |

\*Average of twelve readings.

TABLE 5.—TEMPERATURE DEVELOPED WITH SPEED VARIATION  
(Intermittent Operation)

| Bur Size               | Total Cutting Time<br>Minutes | Speed of Rotation<br>R.P.M. | Pounds Pressure<br>Applied | Temperature*<br>°F | Probable Error |
|------------------------|-------------------------------|-----------------------------|----------------------------|--------------------|----------------|
| (In Enamel and Dentin) |                               |                             |                            |                    |                |
| #557                   | 2.5                           | 1440                        | 2-2.5                      | 51.6               | ± 3.8          |
| #557                   | 2.5                           | 2350                        | 2-2.5                      | 76.0               | ± 7.5          |
| #557                   | 2.5                           | 3400                        | 2-2.5                      | 95.3               | ± 7.0          |
| #557                   | 2.5                           | 4000                        | 2-2.5                      | —                  | —              |
| #558                   | 2.5                           | 1440                        | 2-2.5                      | 59.2               | ± 7.6          |
| #558                   | 2.5                           | 2350                        | 2-2.5                      | 85.7               | ± 6.3          |
| #558                   | 2.5                           | 3400                        | 2-2.5                      | 115.5              | ± 8.8          |
| #558                   | 2.5                           | 4000                        | 2-2.5                      | 132.7              | ± 10.3         |

\*Average of twelve readings.

TABLE 6.—EFFECT OF DISTANCE TO THERMOCOUPLE  
(Cutting Enamel and Dentin With #557 Bur)\*

| Distance in<br>Millimeters        | Temperature<br>°F |
|-----------------------------------|-------------------|
| (30 Second Intermittent Cutting)  |                   |
| 0.5                               | 79.5              |
| 1.0                               | 60.0              |
| 2.0                               | 31.5              |
| 3.0                               | 17.5              |
| 4.0                               | 12.3              |
| 5.0                               | 10.0              |
| (60 Second Intermittent Cutting)  |                   |
| 1.0                               | 57.0              |
| 2.0                               | 35.4              |
| 3.0                               | 24.5              |
| 4.0                               | 17.5              |
| 5.0                               | 13.0              |
| 6.0                               | 11.0              |
| (120 Second Intermittent Cutting) |                   |
| 0.5                               | 79.0              |
| 1.0                               | 56.0              |
| 2.0                               | 32.5              |
| 3.0                               | 23.0              |
| 4.0                               | 17.0              |
| 5.0                               | 12.8              |
| 6.0                               | 10.4              |

\*Cutting time 2–2.5 minutes, speed 3400 R.P.M.

TABLE 7.—EFFECT OF SUSTAINED FORCE WHEN CUTTING ENAMEL AND DENTIN

| Pressure<br>Pounds | Speed*<br>R.P.M. | Distance<br>in MM. | Temperature °F**<br>Average Values |
|--------------------|------------------|--------------------|------------------------------------|
| ( #557 Steel Bur)  |                  |                    |                                    |
| Curve A, Fig. 6.   |                  |                    |                                    |
| 1.5                | 1440             | 0.2                | 48.0                               |
| 1.5                | 1440             | 0.5                | 38.8                               |
| 1.5                | 1440             | 1.0                | 29.9                               |
| 1.5                | 1440             | 1.5                | 23.0                               |
| 1.5                | 1440             | 2.0                | 19.5                               |
| 1.5                | 1440             | 2.5                | 17.5                               |
| Curve B, Fig. 6.   |                  |                    |                                    |
| 2.5                | 1440             | 0.2                | 82.0                               |
| 2.5                | 1440             | 0.5                | 69.8                               |
| 2.5                | 1440             | 1.0                | 53.5                               |
| 2.5                | 1440             | 1.5                | 42.5                               |
| 2.5                | 1440             | 2.0                | 34.5                               |
| 2.5                | 1440             | 2.5                | 29.0                               |

(Continued on following page)

## Curve C, Fig. 6.

|     |      |     |       |
|-----|------|-----|-------|
| 1.5 | 3400 | 0.2 | 128.0 |
| 1.5 | 3400 | 0.5 | 105.0 |
| 1.5 | 3400 | 1.0 | 79.0  |
| 1.5 | 3400 | 1.5 | 63.0  |
| 1.5 | 3400 | 2.0 | 52.5  |
| 1.5 | 3400 | 2.5 | 46.8  |

## Curve D, Fig. 6.

|     |      |     |       |
|-----|------|-----|-------|
| 2.5 | 3400 | 0.2 | 140.0 |
| 2.5 | 3400 | 0.5 | 113.0 |
| 2.5 | 3400 | 1.5 | 70.5  |
| 2.5 | 3400 | 2.0 | 59.0  |
| 2.5 | 3400 | 2.5 | 53.5  |

(#39 Diamond Point)

## Curve E, Fig. 6.

|     |      |     |      |
|-----|------|-----|------|
| 0.5 | 1440 | 0.3 | 28.0 |
| 0.5 | 1440 | 0.5 | 23.0 |
| 0.5 | 1440 | 1.0 | 17.0 |
| 0.5 | 1440 | 1.5 | 13.0 |
| 0.5 | 1440 | 2.0 | 11.5 |
| 0.5 | 1440 | 2.5 | 11.0 |
| 0.5 | 1440 | 3.0 | 10.5 |
| 0.5 | 1440 | 4.0 | 10.0 |

## Curve F, Fig. 6.

|     |      |     |      |
|-----|------|-----|------|
| 1.5 | 1440 | 0.1 | 61.0 |
| 1.5 | 1440 | 0.2 | 57.0 |
| 1.5 | 1440 | 0.3 | 54.0 |
| 1.5 | 1440 | 0.5 | 48.5 |
| 1.5 | 1440 | 1.8 | 28.5 |

\*Operating time 2.5 minutes.

\*\*Taken from points on curves of Fig. 6 representing values for 2-10 readings.

TABLE 8.—TEMPERATURES DEVELOPED FROM CARBORUNDUM STONE  
(Speed 2350 r.p.m.—Wheel Diameter 19 mm.)

| Intermittent<br>Cutting<br>Minutes | Pressure | Distance From<br>Thermocouple<br>Millimeters | Temperature °F<br>Average |
|------------------------------------|----------|--|---------------------------|
| 2.5                                | 1-1.5    | 1.0  | 108                       |
| 2.5                                | 1-1.5    | 3.0  | 53                        |
| 1.0                                | 1-1.5    | 1.0  | 92                        |
| 1.0                                | 1-1.5    | 2.5  | 42                        |

TABLE 9.—TEMPERATURES DEVELOPED WHEN CUTTING ENAMEL WITH "AIRDENT"

Measurements all made at a distance of less than 0.5 mm. from the thermocouple.

| No. of tests made | Rate of Flow | Max. and Min.<br>Values | Average Temperature<br>Change °F |
|-------------------|--------------|-------------------------|----------------------------------|
| 3                 | 40           | -14 1                   | -7.3                             |
| 4                 | 50           | -13 3                   | -3.4                             |
| 5                 | 60           | -5 5                    | -1.1                             |
| 5                 | 70           | -5 5                    | -0.6                             |
| 2                 | 80           | -3 3                    | 1.0                              |
| 2                 | 90           | -5 4.5                  | -2.5                             |
| 2                 | 100          | -5 2.5                  | -2.3                             |

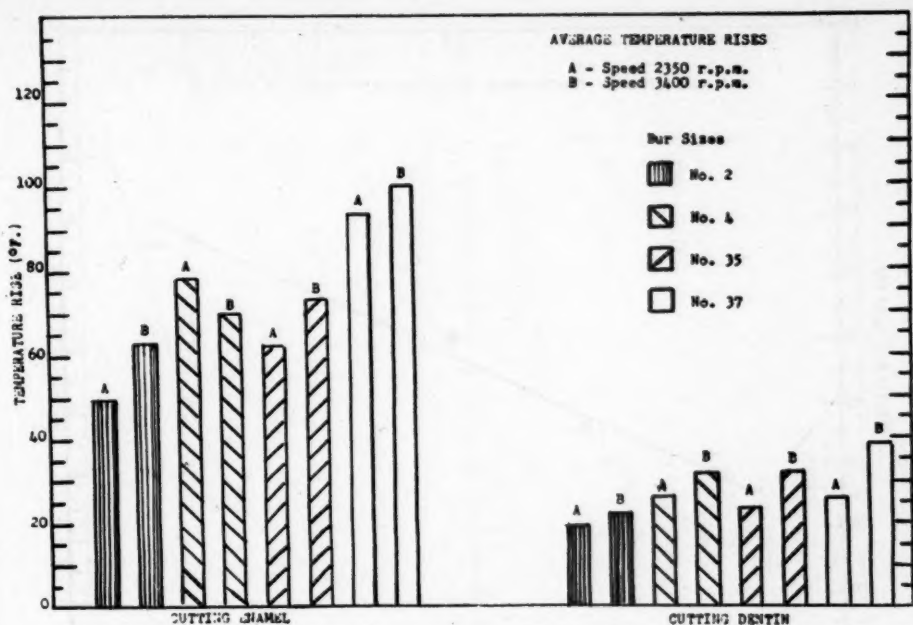


Fig. 1.—Average temperatures developed when cutting enamel and dentin.

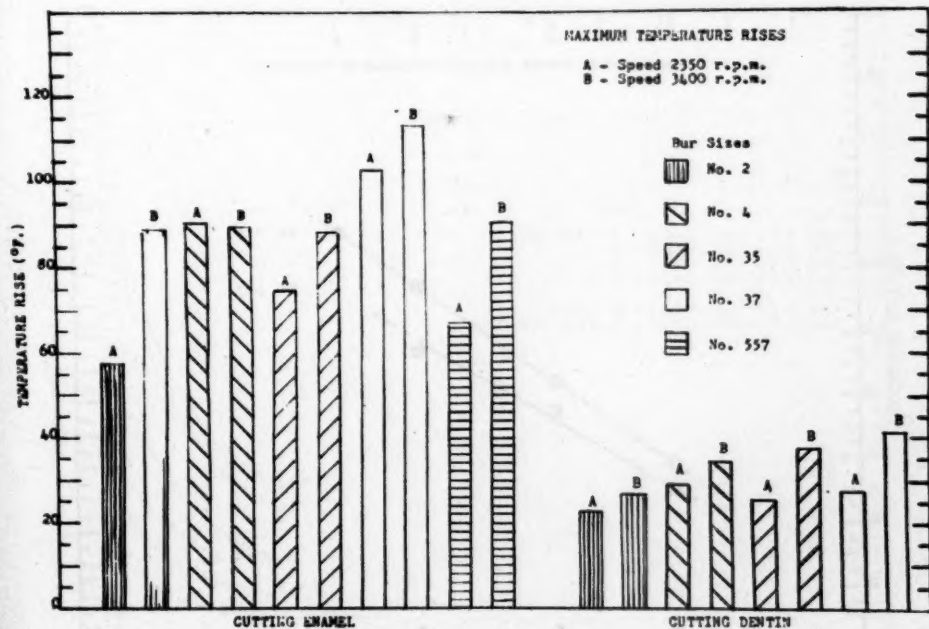


Fig. 2.—Maximum temperatures developed when cutting enamel and dentin.

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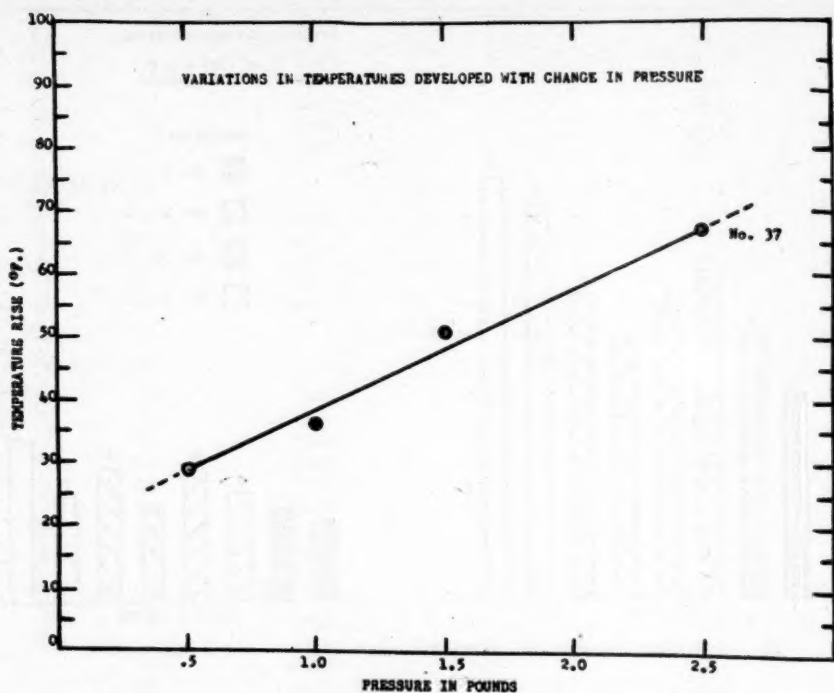


Fig. 3.—Relation of temperature developed to pressure applied.

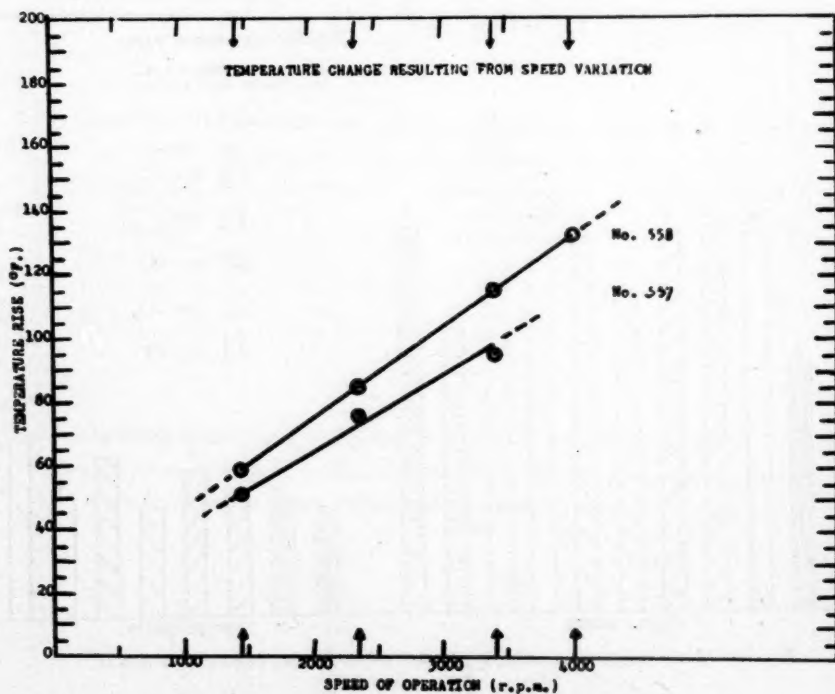


Fig. 4.—Relation of temperature developed to operation speed.

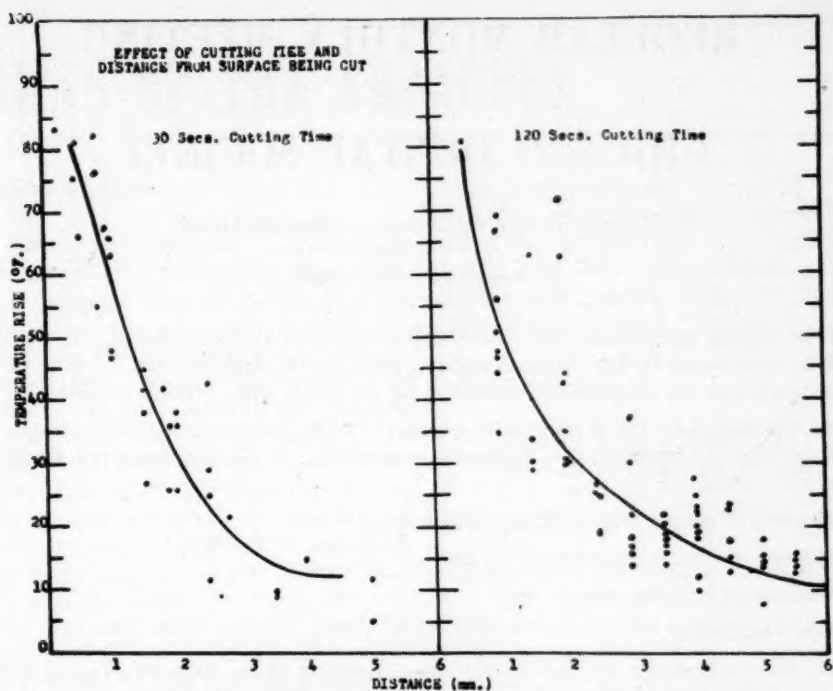


Fig. 5.—Effect of cutting time and distance from cutting surface.

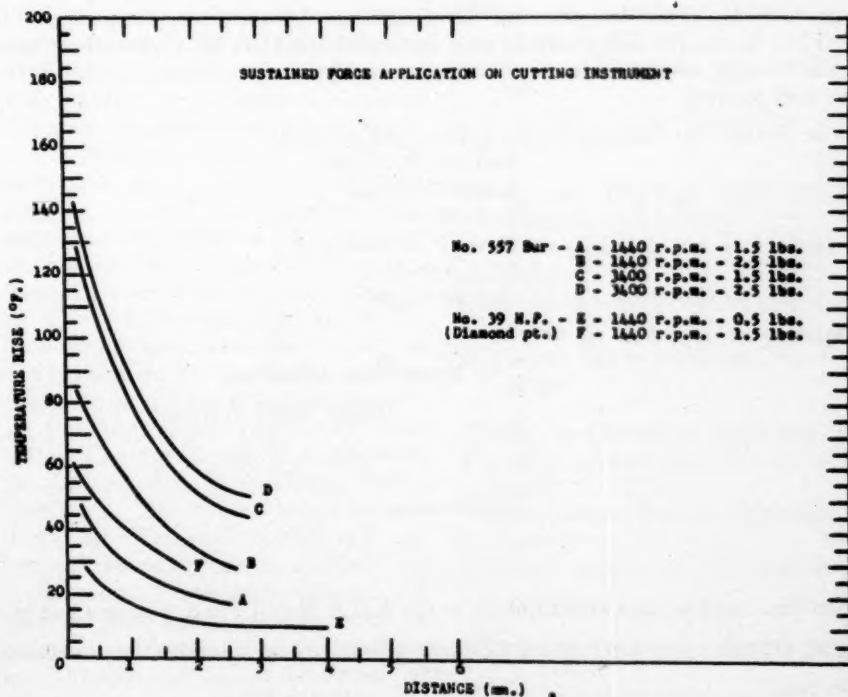


Fig. 6.—Effect of sustained cutting force.

# REGULAR MONTHLY MEETING

of the

## CHICAGO DENTAL SOCIETY

Upper Tower Ballroom — Stevens Hotel

November 21, 1950

The regular monthly meeting was called to order by President Brett at 8:15 p.m. It was moved by Dr. Kremer and seconded by Dr. Riemer that the reading of the minutes of the meeting of October 17 be dispensed with. Motion carried.

It was moved by Dr. Riemer and seconded by Dr. Pinkerton that the minutes of the meeting of October 17 be approved as published in the *FORTNIGHTLY REVIEW*. Motion carried.

Reports of boards and standing committees—none.

Reports of special committees—none.

Unfinished business—none.

New business—

Dr. Brett introduced Dr. Leo W. Kremer, Chairman of the American Dental Association Relief Commission, who presented a plea for greater generosity for this worthy cause.

Dr. Otto W. Silberhorn, Monthly Meeting Program Chairman, was presented by President Brett. Dr. Silberhorn in turn presented Dr. Carl W. Gieler, the essayist of the evening, who gave an excellent paper on "Immediate Dentures," which was very well received.

The lecture was followed by six table clinics given by

Kenneth P. Austin

Robert S. Strenk

S. S. Flores

David P. Redmond

M. J. Robinson

Carl W. Gieler

Meeting adjourned at 10:10 p.m.

Respectfully submitted,

Elmer Ebert, *Secretary*

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When you send in your contribution to the A.D.A. Relief Fund, you are not just buying stamps—you are buying a degree of security for someone less fortunate than you.

# NEWS OF THE BRANCHES

## NORTH SUBURBAN

You know, Christmas is almost here, and you haven't finished all your Christmas shopping. Why didn't you do it last July, like you promised yourself you would do this time last year? You needn't answer that question, but honestly, we do hope you have excellent luck finishing up the job. . . . You are going to get some real facts on sailfish in another issue of the FORTNIGHTLY REVIEW. We are unable to publish them at this time because they are still in the hands of our hard-working chairman of the Ticket Sales Committee, Robert C. Kent, the man who has sold more dinner tickets this year than in any previous year and still he worries. . . . The Lake County Dental Society is quite active again this year; its last program was concerned with, "New Tax Laws as They Affect the Dentist," presented by Mr. William Arspach, C.P.A. The January 8th program at Deerpath Inn, Lake Forest, will present "Precision Attachments and Stress Breakers," by Robert W. Joffe, D.D.S. Dinner reservations are in charge of Sherman Johnston. . . . We hear that Pete Mundell is counting oil barrels by ticker tape; now, he has hit a gusher in Montana. Another tycoon is O. B. Kibler who has hit a few wells right here in Illinois. We hope this good fortune won't put you into too high an income bracket, and you will get to keep a few dollars for yourself. . . . Jim Fonda was treated so well at the A.D.A. Convention that he is attending the Greater New York Dental Society Meeting. . . . We are real happy to learn that C. Roy Terry will be back in his office part time after three months out with a coronary. . . . Grampa Dewel is still making those long week-end trips to Iowa. . . . Another fellow to get home for Thanksgiving was Hal Chason. He spent a week in good old Alabama. . . . Jim Keith spent Thanksgiving in White

Pines State Park, and enjoyed it. . . . The time is now here for us to wish you all THE MERRIEST OF MERRY CHRISTMASSES AND THE HAPPIEST OF HAPPY NEW YEARS.—  
*Milt Dawson, Branch Correspondent.*

## WEST SUBURBAN

### READY FOR CHRISTMAS

by Alice Hansche Mortenson

"Ready for Christmas," she said with a sigh,  
As she gave a last touch to the gifts piled high.  
Then wearily sat for a moment and read  
Till soon, very soon, she was nodding her head.

Then quietly spoke a voice in her dream,  
"Ready for Christmas? What do you mean?"

Ready for Christmas, when only last week  
You wouldn't acknowledge your friend on the street?

"Ready for Christmas, while holding a grudge?"

Perhaps you had better let God be the judge.

Why, how can the Christ-child come and abide

In a heart that is selfish and filled with pride?

"Ready for Christmas, when only today  
A beggar lad came and you turned him away

Without even a smile to show that you cared?

The little he asked—it could have been spared.

"Ready for Christmas? You've worked, it is true,  
But just doing the things that you wanted to do.

Ready for Christmas? Your circle's too small.

Why, you are not ready for Christmas at all!"

She awoke with a start, and a cry of despair,

"There's so little time, and I've still to prepare!

O Father, forgive me, I see what you mean,

To be ready means more than a house swept clean!"

Yes, more than the giving of gifts and a tree,

It's the heart swept clean that He wants to see,

A heart that is free from bitterness—sin  
Ready for Christmas—and ready for Him!

. . . I love that poem, don't you? How can some of you fellows be ready for Christmas the way you have treated this column? You just don't care about the dirty looks Bill Vopata and Clarence Hanson give me when this column falls down. Bill shakes his head and says, "Jack Opdahl is getting old." Clarence nods his head yes, and says, "He should have never been put there in the first place." So all I ask for Christmas is two nice contributions (not teeth). . . . And to you from President Bill Vopata and his hard-working staff, Merry Christmas and Happy New Year and many of them. To your lovely families, we wish the same with the following story in mind for you to please watch your step during the Holidays. **RECIPE FOR DRINKERS:** If you are a married man who absolutely must drink, start a saloon in your own home. Be the only customer, and you won't have to buy a license. Give your wife \$4 to buy a jug of whiskey. Then buy each drink from her. When the first jug is gone, your wife will have \$16 to put in the bank and \$4 to start in business again. If you live 10 years, continue to buy all your liquor from your wife and then die with snakes in your boots. Your widow will have enough to bury you respectably, bring up your children, buy a house and lot, marry a

decent man and forget all about you!

. . . Joe Van Cura did it again. On the morning of the deadline, my dear friend, as if he knew my deplorable predicament has a card in the mail for me. Some day I am going to present Joe with a plaque stating "I hereby present Joseph Van Cura with this plaque in remembrance of the fine noble unselfishness in saving the undersigned from having to go through the shame, disgrace and humiliation of a blank column." How many times a man can save me is questionable but Joe did it again. . . . Barbara Hudlik, daughter of Joe, has been pledged to the Kappa Delta Sorority at the University of Illinois. Joe Hudlik is following Dr. Blaurock's advice to get a hobby and is doing a nice job of woodworking. The Recreation Room and Laundry have to be moved to make way for Joe's jigsaws, band saws, drills, etc. . . . Laddie Kulhanek has just returned from a hunting trip to Southern Illinois. He got two pheasants and a bad cold. . . . John Ott, who has done some wonderful reporting himself, is doing a good job of peppering up and improving the team he is in at St. Leonard's Bowling League. Team is in first place. Yeah team, Yeah. . . . Ernie Irish went pheasant hunting in Iowa over Armistice Day weekend and caught the limit the first day. . . . Bob Christopher went to Bangor, Mich., hunting and received quite a scare because of the storm. Bob thought sure he would have to take another vacation, this one forced. . . . Spencer Magnuson was seen leaving his office early for the International Stock show. I understand Spence has extensive cattle interests and was primarily interested in the \$50,000 prize bull. Some Bull. . . . The nice little ladies who are at our beck and call, and who take the guff and meanness away from us so we can enjoy dentistry, held a nice meeting. The West Suburban Branch of the Dental Assistants Ass'n. held a meeting at the Oak Manor Hotel at 6:30 Thurs., Nov. 30. A wonderful dinner for \$1.50 was served and followed with an inspiring talk, "How to Get Along With Your Boss Even If His Wife Doesn't,"

by that Oral Surgeon Robert Atterbury. Bob is also showing some interesting films. These girls are on their toes and many of them have attended the Washburn School of Nursing, which requires membership in the Association. The Morton High School also has some wonderful courses in dental assisting and is taught by Dr. Merrill Shepro. In spite of the wonderful knowledge and fellowship obtained in these meetings, the attendance and enrollment have been lax. Possibly one suggestion I could make would be to look into the facilities of the Austin Y.M.C.A. The food is wonderful and moderately priced and there is ample room to take care of a couple of hundred girls. Doctors are invited to attend this group and learn first hand the enthusiasm and spirit these ladies show. New applicants please contact Lola Berg, Dearborn 2-0036. . . . As an afterthought "It is not what people do when they work—but what they do when they don't work that causes all their trouble." . . . Any news telephone MEr. 7-6292.—*Olaf S. Opdahl, Branch Correspondent.*

#### NORTHWEST SIDE

So we get zero temperature in Chicago. So do we get any sympathy from some of our more fortunately located brothers. I should say not. Instead, comes in the mail this week, a very nice note, smug-like a little, speaking of sitting out in Bob Baxter's back yard, while we fought zero. . . . Of course, Ed Ziolo does extend an open-handed invitation to any North-westers who may get to 753 E. McDowell Rd. in Phoenix, Arizona. . . . And also enjoying a change of climate are Joe and Marie Zielinski. A card from Rio de Janeiro quotes Marie as saying, "We are having a wonderful dream." The trouble with dreams is that there is always an awakening. Of course the memory lingers on, and that's about all that we do have left after taxes. . . . Jim Mer-shimer has been such a busy bee on the subject of helping furnish news to this column that, when he had no other

news, he tried hopping around with the younger generation and ended up with a badly sprained ankle. Thanks for the news, Jim; but that is a tough way to make the column. . . . A better way is the way that Joe Ullis reports a bag of two pheasants. . . . And Joe still goes strong on the subject of the square table on the 1st and 3d Thursdays at the Irving Park "Y." Why not try it one of these noon hours? . . . The January meeting has reached the completed stage. When President Neer said that this was the year of "Economics," he really meant it. Dan Klein brings the information that the January meeting will present Dr. Wallace N. Kirby of Downers Grove, Ill., on the subject, "Presentation of Dental Service to the Patient." Dr. Kirby brings with him a record of wide travel and discussion on his subject. He has appeared on state and A.D.A. programs. Dan Klein is to be complimented on his ability to get the really best for the members of this branch. . . . Try to see if Dan will let you in on his secret of the headliner for the April meeting. . . . The Dee Company has presented the practical demonstration of the new Hollenbeck outfit. . . . We must close with a sad note on the loss of one of our members, Dr. Anthony Gillotte. To his family we extend our deepest condolences.—*Ben Davidson, Branch Correspondent.*

#### NORTH SIDE

Another N. S. Old Timer, Fergus Connor, has been called by the grim reaper. He was seventy years in age, of which forty-eight were spent practicing dentistry. He has been a member since 1906. . . . Ed Luebke shot a 210-pound deer his first morning of hunting at Lake Tomahawk and treated Mel Zinser, Al Rubin, Bill Cupis, and H. W. Oppice to a dinner of venison steaks in town several weeks ago. . . . Wilfred C. Corcoran, our president, is busy with his bowling this year; he participates two nights a week and reports that his bowling isn't so good—only 170 average—if that isn't

so good, I don't know what is. . . . Joe and Mrs. Ambrose are going to California over the Christmas holidays; seems like everytime I get a news report from Howard Street, Joe is off to California again. . . . Your N. S. entertainment committee has planned another great Ladies' Night for January 13 at the Edgewater Beach Hotel. In past years, we've always had a bangup affair and this year will be even better than ever, so make your plans early to attend. You'll have a swell dinner, plenty of sociability and wonderful dancing. . . . Art Roe, while visiting friends in Pennsylvania, got caught in the record snow storm and was stranded for several days. Rather an inconvenient way to get a vacation. . . . Francis Napolilli has been hard at work trying to increase the membership of his North Shore American Legion Post. . . . We have a report that Steve Bobalek is going into the Armed Forces in the near future. . . . We'd like to take this opportunity to thank Bill Osmanski for his fine job and cooperation in doing a column for us while we were in Atlantic City. By the way, Bill is expecting an addition to his family in the very near future. . . . Another expectant father is Eugene J. Calahan—hear he is out to break the bank. . . . We've been trying to get an affirmative answer from Don Wise about his changing his bachelor status, but so far no results. His work at Northwestern Dental School and a busy practice seem to be more interesting—interesting? . . . Edward T. Suffka's charming wife Shirley presented him with twin boys recently; this brings the total to three sons, looks like the start of a fine hockey team. . . . Milburn H. Johnson is convalescing at home. We hear he is improving and certainly hope that he will be back in practice soon. . . . Walter Nock left to visit his son at Carleton College in Minn., only to find himself 110 miles from home and no longer able to proceed because of the terrific snow fall. Walter turned around, stopped on his way home at the Finn and Feather in Dundee, picked up a wild turkey, took it home and had to be satisfied with Thanksgiving at home.

. . . Balint Orban will be on the television course of the U. of I. on Feb. 8, just after the Midwinter Meeting—subject, "Occlusion in Periodontal Practice." . . . All for now.—*Robert B. Oppice, Branch Correspondent.*

#### SOUTH SUBURBAN

Greetings of the Season to all of you members of South Suburban! I hope all of you are radiating cheer and good will toward your patients and fellow men. Most all of you are so busy with your practices and the demands of the season that there is not too much in the way of news to make this a fat column. . . . Got word that Clarence Folkers is to be found very much at home these days. The word has it that he went and got himself one of those super-duper television sets and he does not want to miss a thing. . . . I'm sure all of you will join me in extending sympathies to Leonard Holt, who recently lost his mother-in-law. . . . On the brighter side, the boys are planning to get together and have a little informal send-off party for H. U. Phillips at Ben's on December 16. If those of you who are interested will call our secretary, H. W. Freitag, he will reserve places for you. Incidentally, wives are very welcome and are asked to attend. . . . Speaking of the military, P. M. Palulis of Homewood was recently classified as 1A by the local draft board. . . . We are glad to see Harold Drummond up and around again after a severe siege of sciatica. . . . Harry Lees, the hunter, succeeded in bagging his first pheasant, and proudly announced that it ran 2½ lbs. dressed and went on to say that when smothered in butter and with all the trimmings, it is really something out of this world. Incidentally, he is to attend a pistol shoot at which the main prize will be a case of whiskey. If you see him going around half shot, you will know he did all right for himself. . . . Among those more hearty and rabid football fans, we have Sidney Bayer of Harvey, who attended the Illinois-Michigan football game at Champaign,

or rather should I say he attended half a game. The snow storm, of which we all know, was so heavy that by half time he could no longer see the field. He went back to his car and enjoyed the second half in warmth and comfort. . . . Quite a delegation attended the Northwestern-Illinois game in spite of the intense cold. Howard Phillips, George Madory, and Clarence Simon of Harvey and Lloyd Bettenhausen of the Heights. Phillips was telling me of a sure-fire method of keeping the feet warm when you know you are going to run into some, intensely cold weather. Put  $\frac{1}{2}$  inch thickness of newspaper in the bottom of your galoshes, then 3 pairs of wool socks, and be sure to leave off the shoes when you put on the galoshes. Phillips said he did this and was the only one of the group who did not have cold feet. . . Neil Kingston took his daughter to attend the Beloit-Grinnell game. . . . Our flying dentist, George Stevenson, recently got the flybug again and on the very cold Saturday following Thanksgiving decided to do some visiting. In spite of the fact that his plane was frozen, he managed to get it started and flew down to Augusta, Georgia in  $5\frac{1}{2}$  hours with the help of a tail wind, stopping in Nashville to gas up. He spent the day there visiting and on Sunday flew on down to Tampa to spend the day with his wife and daughter. On Monday, he took off for the return flight and found that he had to buck a terrific headwind at higher altitudes, so by dropping down and flying at 30 feet he was able to make pretty good time when he found that the wind there was only about 40 m.p.h. He says that it is things like that that keep him from getting bored. Ain't it a grand life! Well, that's all for now. Here's hoping all of you have a Merry Christmas and a Happy New Year!—*H. C. Gornstein, Branch Correspondent.*

#### KENWOOD-HYDE PARK

Toil, trouble, boil and bubble. The seething international pot again threatens to boil over, and now we have an "en-

tirely new war" on our hands. The hour of decision is near at hand—to bomb or not to bomb. The scientific barbarians seem to have forgotten the line penned by the psalmist: "What is man that thou art mindful of him?" At times one may wonder just what goes on in a dictator's mind. Would that we could dissect the dictator's warped mind and determine his reason for thinking that "man is a tool of the state." Guess most dictators think that man is mere biology, cannon fodder, so to speak—a pawn to be checkmated here and there. Man may be mere biology, but he is that plus something else. Well to sum it up, we, yes all the people in this troubled world, are trying desperately hard to keep alive and preserve the things and ideals that we got, strange as it may seem; not from Pericles, great though he was; not from Plato, even though he was great; but from one who knew infinitely more about the dignity and worth of the human individual than did Pericles. Yes, one who certainly knew more about the functioning of the ideal state than did Plato, and that man was the master of them all, the kind and thoughtful teacher who sat by the Sea of Gallilee and gave us the gospel of human kindness. The passing of time has literally spewed up such nefarious characters as Karl Marx, Nikolay Lenin, and Uncle Joe. They have spread their hymns of hate, injustice and avarice, and have had the guts to state: "The gospels are an opiate of the people." Did Uncle Joe ever read the lines from *Macbeth* that were quoted when the Thane of Cawdor, with blood on his hands, was about to meet his fate: "To-morrow, and to-morrow, and to-morrow, Creeps in this petty pace from day to day, to the last syllable of recorded time; And all our yesterdays have lighted fools—The way to dusty death." . . . Toil, trouble, boil and bubble. The seething international pot again threatens to boil over, and now we have an entirely new war "on our hands." Now that the hurly-burly's done, literally musing, your correspondent shall resume his place in sackcloth and ashes and return in the next

(Continued on page 34)

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The following applications have been received by the Ethics Committee: Any member having information relative to any of the applicants, which would affect their membership, should communicate in writing with J. R. Carlton, 2612 E. 75th St. Anonymous communications or telephone calls will receive no consideration.

## Applicants

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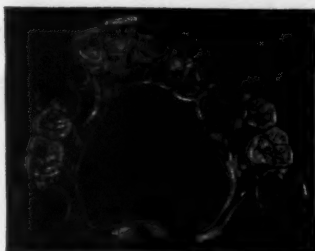
(Continued on page 32)

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## NEWS OF THE BRANCHES

(Continued from page 29)

issue loaded with news and personal items of interest.—*Howard E. Strange, Branch Correspondent.*

### ENGLEWOOD

Extra! Extra! Francis J. O'Grady announces his candidate for All-American full back—1969. The above news simply means that Frank O'Grady has recently become the proud papa of a fine boy, courtesy of Mrs. O'Grady, after a long line of three daughters. This event calls for fifty-cent seegars at the very least. . . . The Thanksgiving Holidays are over and most things have returned to normal. Guess the turkeys can rest easy for a couple of weeks more. . . . Lou Ahner and Charlie Andreas were both laid up with severe cases of bursitis. . . . Frank Farrell missed some time in the office due to illness. . . . We are most happy

to hear that Bill Phillips is home after six weeks in the hospital due to a cardiac condition. Bill is still under wraps but can have visitors. . . . Not many people know this, but Englewood almost had a jailbird for president. Thanks to a nimble wit and silver tongue, Ed Glavin was able to make the officer see the situation his way without receiving a punch in his driver's ticket. . . . Dick Valentine spent turkey day with his daughter in Cleveland. . . . Bill Cruikshank visited with his parents on the long weekend, and Harold "Champ" (he plays a mean game of ping pong) Hayes spent Thanksgiving at the old homestead in Kankakee. . . . Ken Poust and Bob Hattendorf report a very successful quail hunting trip in central Illinois. . . . Chris Davidson and Bill Rennie claim Missouri the place for quail hunting; bagged their limit in a day and a half. . . . Vince O'Brien's son went into the Air Corps and his daughter married within the last few weeks; must be a lot of extra room at the O'Brien home. . . . Walter Shaffer

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is moving to Arizona to live and practice. Good luck to you, Walt! . . . Vince Milas is taking over the fulfillment fund at C.C.D.S. (Loyola). This is a time consuming job and I'm happy it's Vince and not myself. . . . Thanks to Mal Brooks for his little cards of items.—*Lawrence E. Lucas, Branch Correspondent.*



# **MIDWINTER MEETING PROMISES PEAK PERFORMANCE**

*(Continued from page 5)*

Libberton and Byron Kelly (Full Dentures) and R. C. Van Dam and his Denture Research Group.

Root Canal Therapy will not go unheeded. Englewood will present its triumvirate of Thomas Starshak, Lester Kalk, and Vincent Milas with "Practical Procedures in Root Canal Therapy." Saul Levy, now of the University of Illinois College of Dentistry, will clinic on "Measurement Control in Curetting and Filling Root Canals."

Radiography will be ably presented by Byron May of Chicago and Crown and Bridge by Emil H. Bollwerk of St. Louis and Harry Spiro of Chicago. A special clinic on Hypnosis by William T. Heron of Minneapolis, will demonstrate the power of suggestion as an aid in patient cooperation. C. A. Cameron of Park Ridge, will present "Dental Photography."

Last, but by no means least, comes the Section on Children's Dentistry and Orthodontia. The clinics listed under this heading include: "Better Cavity Preparation for Deciduous Teeth," Frank J. Kropik of Chicago; "Treatment of Fractures of Anterior Teeth in Children," Gerard J. Casey of Chicago; and "Children's Dentistry," by Ralph E. McDonald of Indianapolis.

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## NEWS AND ANNOUNCEMENTS

(Continued from page 8)

duck" session of Congress. The House and Senate are expected to concentrate on emergency defense legislation, rent control extension and possibly a new tax bill. One reliable registration service estimates that eight new Senators-elect are certain to oppose President Truman's domestic program which includes compulsory health insurance.

### JOHN S. MORRIS 1900-1950

John S. Morris, a member of the Kenwood-Hyde Park Branch of the Chicago Dental Society, died October 14, 1950 at Michael Reese Hospital. He had been ill for some time from a virus infection.

Dr. Morris was graduated from Northwestern University Dental School in 1925. He was at one time Chief of the Provident Hospital Dental Staff. He was

a life-long member of the Lincoln Dental Society. Surviving are his widow, Adelaide; two children, Spurgeon, Jr. and Julie Adelaide; a brother, Lt. E. A. Morris; and two sisters, Mrs. Mattie Marquis of Philadelphia and Mrs. Sarah M. Proffitt of Chicago.

### HELEN WISNOW 1901-1950

Helen Wisnow, a member of West Suburban Branch of the Chicago Dental Society, passed away October 27, 1950. She had been ill for a long time but her death came suddenly.

Dr. Wisnow was graduated from Northwestern University Dental School in 1923. She was chairman of the Reception Committee for Visiting Women Dentists a few years ago and a past-president of the Chicago Club of Women Dentists.

She is survived by her mother, Mrs. Anna Wisnow.

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